

Use Case 13: Service Restoration

Summary:

This procedure describes what activities are performed by an operator in the control room when he has to restore service after completion of maintenance work or after isolating a faulty section [4]. The operator performs feeder reconfiguration in order to pick up the load on adjacent feeders by appropriate switching. It is possible to create and execute certain jobs in order to restore service [UC24], [UC25] and [UC26].

Actor(s):

Name	Role description
Operator in the control room	performs orders to the control system and/or the field crew
Field operative	performs operator's orders and confirms execution

Participating Systems:

System	Services or information provided
Network Operation	<ul style="list-style-type: none"> Network operation monitoring (substation- and network state supervision, logging) Network control (remote or local through field operatives) Fault management (supports restoration switching actions)
Operational Planning and Optimization	<ul style="list-style-type: none"> Switching action scheduling/operation work scheduling (dispatching of field operatives)
Maintenance Management	<ul style="list-style-type: none"> Maintenance work scheduling and control (Work flow management and Work state supervision)
Work Management System	<ul style="list-style-type: none"> Allocation of work, staff and initiation of updating the Asset Register

Pre-conditions:

The SCADA System is in operation. The operator is logged in the system. A fault isolation or a work on a network element (e.g. line, breaker, transformer) has been completed. The field crew is ready and equipped.

Assumptions / Design Considerations:

The operator might not be the same throughout the entire operation, so tagging is fundamental.

Normal Sequence:

Use Case Step	Description
Confirmation from field operative	The operator receives the confirmation about the end of work or fault isolation in that section from the field operative.
Remove grounding	Remove the grounding rod at the extreme of the

	line ends.
Open „normal open“ switch	If the operator performs a back-feed of the area, then he orders to open „normal open“ switch (the one that allow back-feed). An order can be to: field operative or control/command.
Remove temporary network changes	In the case that the operator did a temporary network change (like temporary line), he should order the removal of that change.
Re-commission the section of line feeder	After the completion of previous step, the operator orders the closing of the switches. The switches can normally be closed on any order or both at the same time. [Exception - Re-commissioning has to be done in a special order.]
Remove tags	Finally, the operator removes the tags of the line and all other tags that might be related with only that particular work.

Exceptions / Alternate Sequences:

[**Exception** - Re-commission has to be done in a special order.]: The closing of switches can sometimes have limitations, i.e., they have to be made in a special order (Load Pick-up).

Post-conditions:

Operator restored service by appropriate switching.

References:

- [1] Use Case – UC24 Job Management/Interactive Job Creation
- [2] Use Case – UC26 Job Management/Job Creation by Recording
- [3] Use Case – UC25 Job Management/Job Execution
- [4] Use Case – UC29 Fault Isolation